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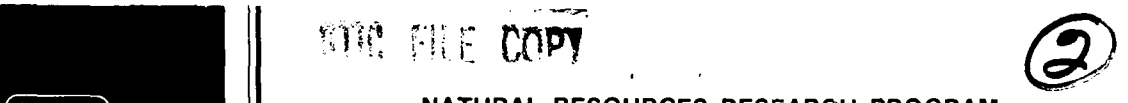

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OPERATIONAL MANAGEMENT PLANS: STATUS, CONTENT, AND IMPLEMENTATION

by

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Environmental Laboratory

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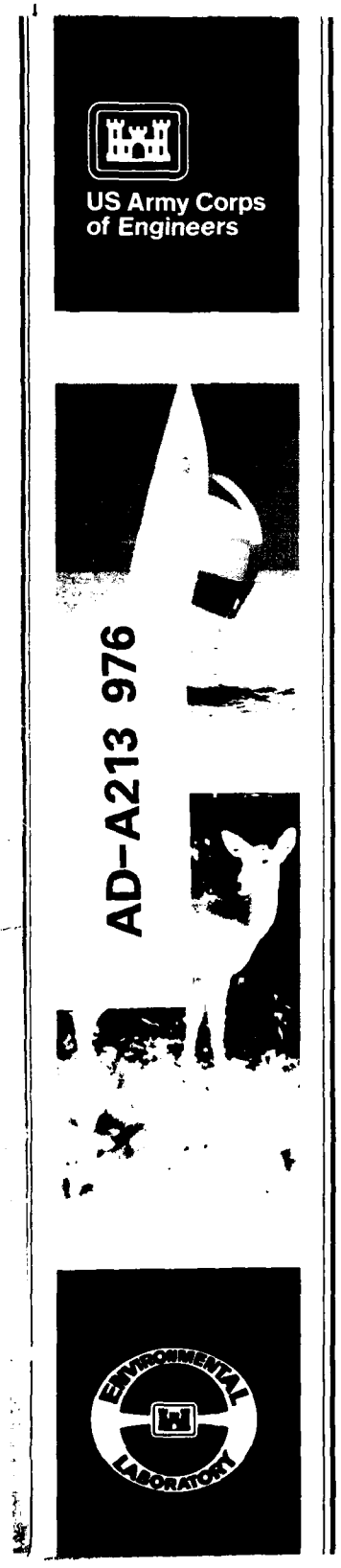

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This report presents the current status, content, and implementation of Operational Management Plans (OMPs) by District and project personnel within the US Army Corps of Engineers. A questionnaire was developed to request information on what District and project offices are doing toward preparing and implementing OMPs. This report is a summary of the questionnaire results.

Four areas emerged as requiring attention for improvement of the OMP process in the Corps. These management implications for improving the OMP are not intended as recommendations, but serve as considerations to be evaluated in conjunction with broader institutional concerns and developments.

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PREFACE

This report was prepared as part of the Natural Resources Management and Planning Work Unit 32503, funded under the Natural Resources Research Program (NRRP). The study was authorized by Headquarters, US Army Corps of Engineers (HQUSACE). Technical Monitors for the study were Ms. Judy Rice and Mr. Robert T. Daniel, HQUSACE. The report was prepared by Ms. Linda D. Peyman-Dove, Mr. Michael R. Waring, and Mr. John P. Titre, Resource Analysis Group (RAG), Environmental Resources Division (ERD), Environmental Laboratory (EL), US Army Engineer Waterways Experiment Station (WES). The work was performed under the direct supervision of Mr. H. Roger Hamilton, Chief, RAG, and under the general supervision of Dr. Conrad J. Kirby, Chief, ERD, and Dr. John Harrison, Chief, EL. Mr. J. Lewis Decell was Program Manager, NRRP. Technical reviewers were Mr. H. Roger Hamilton and Mr. Jim E. Henderson, RAG. Mr. Waring was the Principal Investigator. This report was edited by Ms. Lee T. Byrne of the Information Technology Laboratory, WES.

Commander and Director of WES during preparation of this report was COL Larry B. Fulton, EN. The Technical Director was Dr. Robert W. Whalin.

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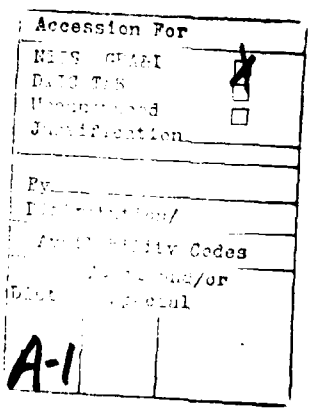

CONTENTS

OPERATIONAL MANAGEMENT PLANS: STATUS, CONTENT, AND IMPLEMENTATION

PART I: INTRODUCTION

1. This report was prepared for the Natural Resources Management Planning Work Unit 32503, funded under the Natural Resources Research Program. One of the initial concerns of the work unit is the development of Operational Management Plans (OMPs). The objective of this task is to better understand the current status, content, and implementation of OMPs by US Army Engineer District and project personnel. An understanding of the existing situation can facilitate measures to enhance both adoption of OMPs and increase their effectiveness toward improving project operation and District coordination. To the extent that OMPs function as a desktop reference available to all parties responsible for operational management, decision makers can be better informed of the basis for actions necessary to ensure successful project operation.

2. This report is a summary of questionnaire results from US Army Corps of Engineers District Operations Divisions and project offices. It is intended to provide insight on the following objectives and to determine how many Districts and projects are developing OMPs for effective management of the project. Specific objectives were to:

a. Determine the current status of OMPs from a representative sample of Corps Districts.

b. Identify the major topical components of existing OMPs.

c. Determine the current level of implementation based on selected effectiveness criteria.

3. As an extension of this report, the US Army Engineer Waterways Experiment Station is reviewing existing OMPs to determine how the OMPs are being developed, what information is needed, and how the information is being used for effective management. The Oahe Lake OMP, Omaha District, provides a good example of using innovative measures to develop a working document to serve as the basis for daily operation. This District has been using a geographical information system (GIS) for 2 years to store and analyze inventory data and produce up-to-date, dynamic OMPs. They are currently working to implement a GIS at the Oahe project office. No other projects within the Corps have an available system operating at a project site at this time.

PART II: METHODS

4. Although ER 1130-2-400, June 1986 (Office, Chief of Engineers 1986), provides general guidelines on developing an OMP, there exists considerable flexibility in preparing the plan, as evidenced by the topical outlines of current OMPs later described in this report. This is a reflection of the diversity of project operation issues that confront day-to-day management. An understanding of OMPs nationwide provides an avenue to examine what is contained in an OMP in relation to established guidance. To obtain this understanding, a questionnaire was developed to request information on what District and project offices are doing toward preparing and implementing OMPs. Copies of the cover letter and questionnaire are presented in Appendix A.

5. Each Division natural resource management system (NRMS) point of contact and each Operations Division within each District were contacted concerning the study. District personnel were asked to select one project that they felt was "representative" of their OMPs and to answer the questionnaire based on that project. This affords a representation of District interpretation and implementation of OMP guidelines. However, even when requested to provide representative samples of OMPs, subsequent telephone conversations with District personnel indicate a tendency to share their best, only, or most complete OMP. To the extent that selected OMPs serve to guide each District, a collection of selected plans as is reported here may serve as examples to guide and improve unfinished or anticipated plans. It has been observed in the technology transfer literature (Jolly, Creighton, and George 1978) that implementation of an institutional idea often follows the lead taken by innovators within the organization. Hence, an understanding of this sample may serve to enhance the process of implementing OMPs Corps-wide.

6. A majority of Districts had only one complete OMP, which they had developed as a prototype for other projects. These prototype OMPs give a representative overview of what to expect from future OMPs. Those Districts that did not have a completed OMP answered the questionnaire based on their most complete OMP.

7. The questionnaire was either sent directly to the selected project or to the District point of contact, whichever the District preferred. Questionnaires were to be answered jointly by the District and project personnel depending upon who prepared the OMP. This is a form of nonprobability

sampling termed purposive (Kerlinger 1973). It is intended to obtain information on typical units within the population. Since it is nonrandom, elaborate statistical procedures are inappropriate.

8. The questionnaire was mailed in December 1988 to 27 Operations Divisions within Corps Districts and 2 project offices, with each Division NRMS point of contact also receiving an information copy. During the initial telephone conversations with the Division NRMS point of contact and the Operations Division within each District, it was established that the New York, Norfolk, Buffalo, Chicago, Detroit, San Francisco, and New Orleans Districts do not have projects that require an OMP. Therefore, a questionnaire was not sent to those Districts.

9. Of the 29 questionnaires that were distributed, a total of 26 were returned, yielding a response rate of 89.7 percent. Although no follow-up mailings were conducted, telephone calls were made 10 days after the requested mail-back date. Throughout the report, percentages will be based on the number of responses to each question (i.e., n = number of responses). Nearly all written responses are included as they appeared in the questionnaire.

PART III: FINDINGS

Overview

10. Currently, only 25 percent of the existing OMPs are complete or are under revision/review. However, within a year (1990) approximately 85 percent of all plans are expected to be complete. Therefore, most of the OMPs in the Corps will be written and revised during 1989.

11. Generally, OMP preparation is a joint effort with the project initiating the writing and the District coordinating the necessary review. At the project office, rangers dedicate about half of their time during OMP preparation, and managers spend one-third of their time; in the District office, outdoor recreation planners dedicate about half of their time during OPM preparation, and other specialists (e.g. landscape architects, wildlife biologists, and foresters) spend less than one-fourth of their time. Respondents rated this combination as being effective.

12. Major sections of the OMP tend to fall into three categories: Introduction, Resource Management, and Park Management with separate annual and 5-year plans contained in each section of the OMP. Several more innovative plans build on this framework by establishing integrated plans that address the relationships between functional responsibilities. All plans display a particular need for flexibility, as evidenced by the diversity of topics found on each project.

13. The preparation of objectives appears to be one of the weakest aspects from the sample of OMPs. Generally, the objectives lacked specificity when compared with the established criteria and were written similar to master plan type "goals." Fortunately, a few plans did meet all criteria for writing good objectives.

14. Nearly all projects sampled conducted resource inventories. Recreation and soils data appear to be the most complete. Microcomputer-based data collection and analysis systems contribute to about one-half of the information compiled for resource inventories. Less than 10 percent of the OMPs are associated with GISs. The Corps project operations staff has entered the microcomputer age, although acceptance of this new technology has not been overwhelming as an improved method for conducting inventories.

15. The final and most important research question posed by this study

is, "How far along is the Corps in the OMP process?" As mentioned previously, 1989 seems to be critical in progressing toward full implementation. The OMP process in the Corps is about halfway toward reaching that goal. However, a new research question emerged from this effort and is perhaps more important than the descriptive question of whether an OMP has been marginally or fully implemented. More important is the evaluative question, "How good is the OMP?" An attempt to answer this question and provide insight on the future direction of OMPs is provided in Part IV.

Specific Findings

16. The findings are organized according to the three study objectives:

a. Objective 1: OMP status within the Corps.

b. Objective 2: Components of an OMP.

c. Objective 3: Overall effectiveness of the OMP.

Research questions are used to group the questionnaire results under each objective. This facilitates a quick reference to those questions of interest to a particular audience (e.g. Office, Chief of Engineers; District; project) and enables a discussion of how these findings relate to the improvement of OMP progress in the Corps. Some questions are taken directly from the questionnaire, while others represent a combination of questions taken from the questionnaire. Combined questions are marked with an asterisk (*).

Objective 1: OMP status within the Corps

17. What is the current status of OMPs Corps-wide? The Corps has 398 projects that require an OMP, based on the sample (n = 26). Figure 1 illustrates the completion status of these OMPs. It is divided into six categories: complete, under review, under revision, being written, planned, and not anticipated.

18. Only 5 percent of the OMPs are complete. However, 20 percent are either under review or revision. Several respondents stated that although their OMPs are not yet approved, they are currently using the annual work plan. Furthermore, District personnel commented they are spending their initial time preparing a prototype OMP that can serve as a guide for other projects. This is especially true for those Districts responsible for numerous OMPs.

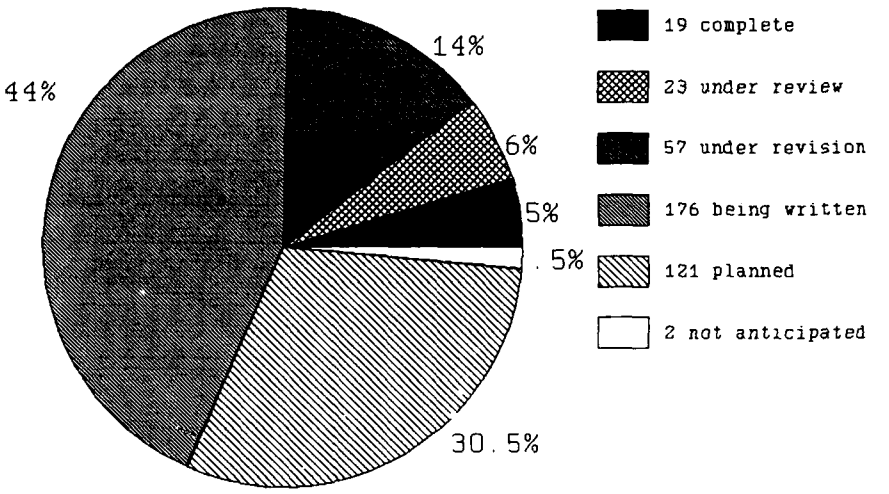

Figure 1. Current status of OMPs

19. What is the anticipated status of OMPs by 1990?* District personnel were also asked to provide an approximate date for completion of OMPs. Figure 2 shows that by 1990 respondents predict that approximately 85 percent of the OMPs will be complete (n = 23). In comparing Figures 1 and 2, it is clear that in 1989 nearly all OMPs will be completed.

20. Who is involved in preparing the OMP? Producing an OMP generally requires input from both project and District personnel. Figure 3 shows the distribution of percentages of types of project personnel, by job title, preparing the OMP (n = 25). The other category includes biologists, foresters, landscape architects, engineering technicians, and miscellaneous temporaries. In general, park rangers spent a greater amount of their time on OMP preparation than either the park managers or the personnel in the "other" category.

21. Figure 4 illustrates the percentage of personnel involved in the preparation and review of the OMP at the District level (n = 25). Overall, personnel at the District level spent less time during preparation of the OMP than did the project personnel. One District remarked that they are very team-oriented and prepare both the master plan and OMP through efforts of the interdisciplinary team. Planning Division is assigned the lead for the master

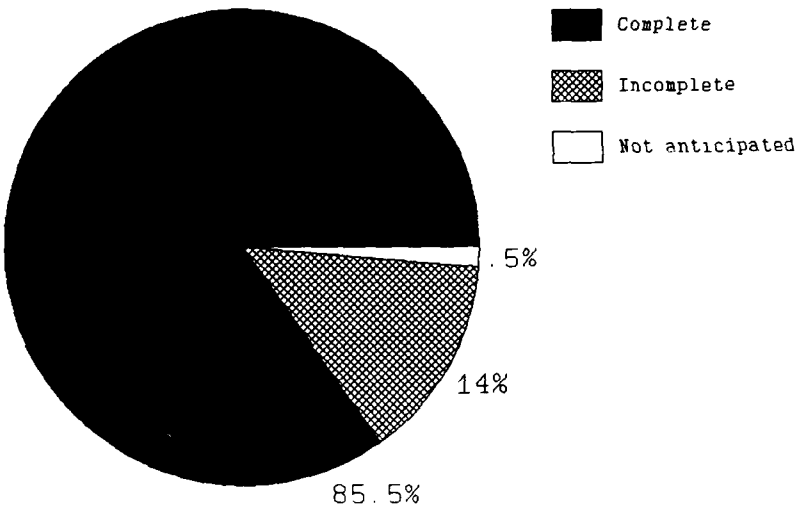

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Figure 2. Projected status of OMPs, 1990

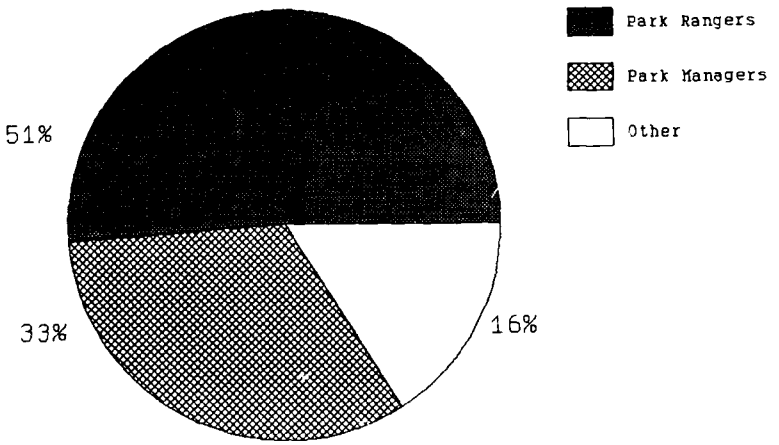

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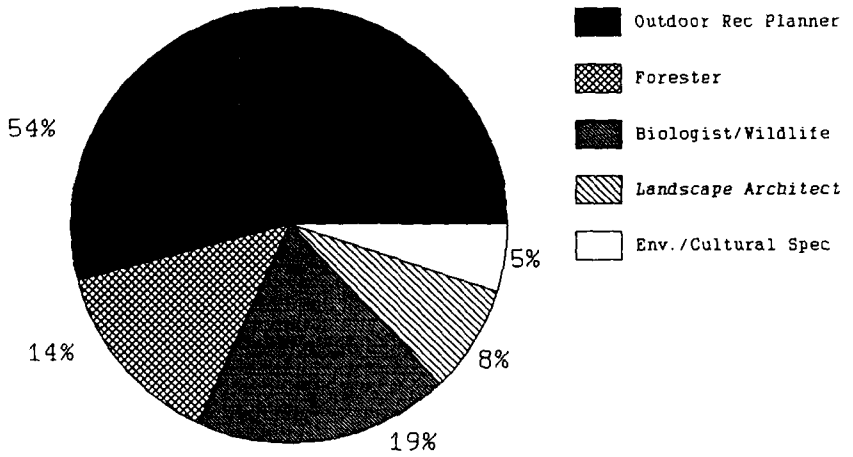
Figure 3. The OMP preparation, project personnel



n=25

Figure 4. The OMP preparation, District personnel

plan, and Operations Division is the lead for the OMP.

22. According to the responses, District and project offices usually produce an OMP as a joint effort. This effort often begins at the project, as stated by one respondent,

> Those best qualified to prepare the OMP are on the project and have experience with the resource.

However, project personnel may not always have the time to work on the OMP, as noted from the questionnaire results:

> Project level park ranger is the most familiar with project features, problems and needs but often lacks the time necessary to complete the OMP document.

When park rangers do find the time, they begin the process according to this description:

> Park rangers were assigned various chapters. Their efforts were reviewed by a senior ranger and eventually a park manager. Constant flow of ideas and information among participants resulted in a highly usable product.

The process is completed as it moves through the normal chain of command as described here:

> Generally, a natural resources ranger and a recreation ranger prepare the draft OMP. It is prepared on *Wordstar software*, reviewed by the Resource Manager, and forwarded to the District Office where an Environmental Specialist and an Outdoor Recreation Planner finalize it. Often, a draft is also submitted to Planning Division, Real Estate Division, and the Safety Office for review. A copy may also be sent to the Division Office for informal review.

This process seems to conform with other document coordination and review procedures.

23. How effective is a team in preparing the OMP? Overall, the respondents rated the effectiveness of the team preparing the OMP somewhere between moderately and very effective. Open-ended responses tended to support this evaluation. One respondent who rated the team process as very effective said,

> OMP was done completely in house with information provided by project resources. District personnel came to project to accomplish their part of the work.

It seems that the team concept is not only helpful, but a necessity given the task of doing an OMP, as observed by this respondent,

> The OMP cannot be put together by one person, since the plan covers a broad range of topics; a team is necessary from different backgrounds.

Furthermore, in commenting on the team concept, one respondent remarked that

> It works well with large projects; one person does not have "burnout"; it inspires a variety of ideas.

24. As expected, team coordination is not without problems. Another respondent felt that

> The team worked well together in producing the narrative portion of the OMP. The most difficult tasks have been gaining District support for drafting of plates and attachment and in receiving comments from the District and Division.

The project/District coordination can also be hampered by other factors like distance, as observed here,

> Close personal communication between District and field during preparation was hampered by distance between the two (175 miles (281.6 km)).

25. It seems that the team approach toward doing an OMP is necessary and effective. Institutionally, the preparation and review process has "fallen in place" without rigid guidance.

Objective 2: components of an OMP

26. What are the topical components and major sections of an OMP?* To understand better the components of an OMP, respondents were asked to forward their table of contents or the entire OMP if possible. A description of the major sections and subsections provides insight into the areas of content deemed important by the project or District for a successful OMP.

27. The major sections and subsections of an OMP depend on the issues associated with management of a particular project. In reviewing the Table of Contents for 22 sample projects, it was revealed that three major sections were common to nearly all plans: Introduction, Natural Resource Management, and Park Management. An annual plan and a 5-year plan were also common to all OMPs sampled. Some plans displayed unique sections, such as functional responsibility, implementation of management plans, and interrelationship with other programs.

28. Given the diversity of topics covered by a particular project, it seems useful to provide two examples of OMP outlines that display (a) basic components and (b) an advanced version. Although no two OMPs are the same, which probably works to their advantage and effectiveness, the examples may serve as a point of departure or prototype for evaluating anticipated or existing OMPs.

29. The following outline describes the typical components of a basic OMP found in the sample.

I. Natural Resource Management

- Description of Project
- Objectives of Resource Management
- Compartments
- Aerial Photographs
- Fire Protection
- Encroachments
- Work Plans
- Coordination with Other Agencies

II. Park Management

- Safety
- Physical Security
- Visitor Assistance
- Shoreline

Private Exclusive Use
Outgrants
Maintenance
Recreation Fee Program
Interpretation
Cultural Resource
Special Programs
Cooperative Activities with Other Agencies
Five Year Program
FY 89 Work Plans Index

30. The following outline describes the typical components of an advanced OMP taken from the sample.

I. Project Narrative

Introduction
- Authority
- Project Purposes
- Scope
- Master Plan
- Background References
- Project Description
- Location
- Geology/Physiology
- Climate
- Soils
- Hydrology
- Vegetation
- Wildlife
- Fisheries

Natural Resource Supporting Programs
- Fire Protection Plan
- Flood Control Plan
- Firewood Management Policy
- Vegetative Management Plan
- Fish and Wildlife General Plans

Recreation Supporting Programs
- Safety Program
- Project Security Plan
- Visitor Assistance Program
- Recreation Use Fee Program
- Lakeshore Management Plan
- Interpretive Plan
- Cultural Resources Plan
- Maintenance
- Outgrants

Special Concerns
- Endangered Species
- Fish and Wildlife Mitigation

Security Plan
  Project Security Plan
  Project Surveillance Plan
Lakeshore Management Plan
Interpretive Plan
Maintenance Standards
Outgrants
Bibliography
Project Map of Management Units
Management Unit Priority Rationale
Management Cost Estimates
Par Approval Letter

31. The second version (paragraph 30) is preferred because it is better organized, is more specific, and provides a broader treatment of the functional relationships between components of the OMP. It follows a systems approach such that the management system is composed of subsystems or supporting programs that outline management responsibility. This permits the implementation of management plans and satisfies other concerns discussed in implications. Other areas that are less dynamic, such as the security plan, are found in Appendix A.

32. How are objectives written? For those Districts that sent complete OMPs (n = 6), objectives were evaluated on the five characteristics of a good objective (Reddin 1971):

a. Specific.

b. Output oriented.

c. Quantifiable.

d. Time bound.

e. Attainable.

Since the OMP is a functional departure from the master plan, it is expected that objectives contain specific wording to achieve these five criteria in contrast to general wording, such as to "provide quality recreation experiences." In general, objectives did not adhere to these criteria. The implications of writing specific objectives are discussed in Part IV.

33. One plan established the importance of objectives for natural resource management under the heading, Administration:

> Specific Management Plans. A prescription or specific management plan for each compartment is included in Appendix X. Specific management plans include location of the compartment, general description of the physical and biological resources of the compartment, the forest and wildlife management practices to be performed, and scheduled data to initiate compartment inventory. These management practices will be in

harmony with the management objectives and techniques presented in this plan.

In the same plan, objectives were specified under the heading, Management Guidelines:

> (1) Management Guidelines. To achieve the forest habitat development objectives, the following are forest cover distribution goals for each timber-harvesting area.
>
> (a) Fifteen percent of each compartment will be maintained in old growth (80+ years) through preservation or an extended rotation period.
>
> (b) Forty percent of each compartment will be maintained in the production of hard mast, which requires a wide distribution of oaks and hickories in the 40- to 80-year-old class.
>
> (c) Twenty percent of each compartment will be maintained in forage production. This requires a distribution of young trees less than 10 years old, as well as a variety of berry-producing vegetation and weeds from fields and forest openings.
>
> (d) The remainder of each compartment will be various age classes approaching harvest age. These guidelines are not to be applied as a strict recipe, but only as general guidelines for achieving desirable long-term conditions. In many compartments, mast, forage, and old growth may not occur at all, nor can they be programmed to occur during the current 10-year planning period.

34. Another plan included long-term objectives such as, "Preserve and enhance visual and open space values." This wording would be better described as a goal found in a master plan. The OMP addresses the master plan goals and specifies tasks, listed by priority with task description and completion dates to achieve that goal. For example, the objective, "Conduct selective tree thinning in management units E-14, E-15 in 1992 at a cost of $500," fulfills many of the criteria for management objectives. Another example objective, "Repaint all shelters, picnic tables, and utility tables by March 1989, at a cost of $46,000," meets all the established criteria.

35. Does an OMP involve the use of resource inventories? As a foundation for resource management decisions, OMPs are expected to include resource inventories. Approximately 88 percent of the projects included in the sample prepared a resource inventory (n = 24). For the three projects (12 percent) that do not have resource inventories, 75 percent or more of the annual project benefits are attributed to flood control. These projects may not need resource inventories to the extent of projects with multiple resource benefits. Apparently, resource inventories are an important part of OMP preparation for projects requiring them.

36. How complete do project personnel consider their resource inventories? Respondents were asked about the completeness of their inventories on a scale of one to five, with one representing nonexistent and five representing very complete. Although some misinterpretation may exist on what is meant by these terms, responses provide a relative measure of the emphasis assigned to individual categories. Figure 5 shows that progress has been made in all inventory categories (n = 22). The recreation and soils inventory data appear to be the most complete.

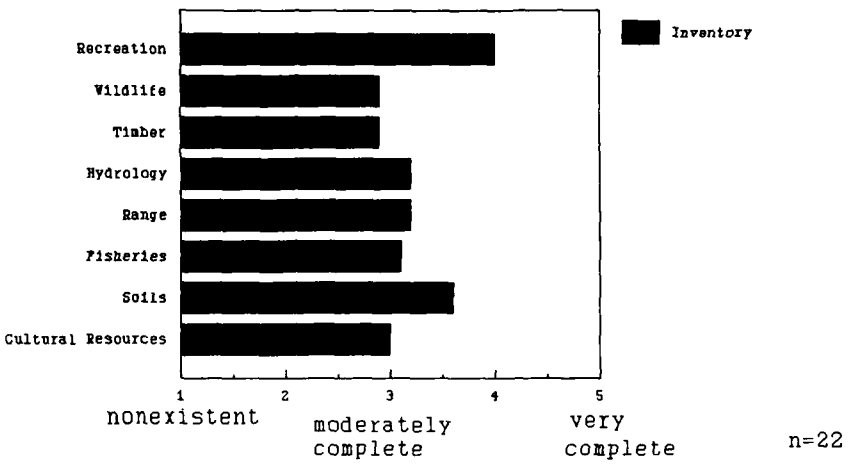


Figure 5. Completeness of inventories

37. What are the major methods of reporting and analyzing resource inventory? Approximately 50 percent of the projects reported they use only narrative descriptions to analyze and report resource inventories (n = 22). The remaining 50 percent use various combinations of narrative descriptions, manual overlays, data base management systems, and GISs.

38. How many Operations Divisions use a GIS for OMPs?* Only three Operations Divisions (n = 25) within the Corps Districts either have a GIS or have access to a GIS and are actively using it to produce an OMP. Three other Districts indicated they have a GIS in their District, either in Planning or Engineering Division; however, comments indicated that Operations Division is not involved with the use of these GISs. Omaha District is the only District planning to implement a GIS at a project office (Oahe Lake) in the immediate

future (March 1989). The Vicksburg District stated that they ordered a GIS, which will be delivered shortly, with satellite systems being procured for each project office compatible with the District system. Several Districts indicated they are interested in GISs and are studying the possibility of purchasing a system, while other Districts indicated a lack of familiarity and knowledge on how a GIS would be used.

Objective 3: Overall effectiveness of the OMP

39. How far along is the Corps in the OMP process?* Objectives 1 and 2 have identified how many OMPs are complete or being written and what they contain. One question that has not been addressed focuses on how much progress is being made toward full implementation. Several questions from the questionnaire were combined to address this overall question. First, it may be helpful to examine percentages for each individual question that will be used to develop this overall picture.

40. On the average, OMPs have been in operation approximately 1-1/4 years (n = 25). Approximately 88 percent of the OMPs have annual work plans, while 56 percent have annual meetings (n = 25). The responses indicate that 100 percent use regular office files, 96 percent use word processing files, 64 percent are using some type of spreadsheet or data base program, and 12 percent are using a GIS (n = 25). On the average, OMPs are used about 2 times per week.

41. An index was developed to summarize this information and locate the OMP implementation process on an implementation curve. The above items were assigned points to yield a "score" for each OMP (n = 25). A brief explanation for each score follows the variable. One District was not included in the implementation curve, because their only OMP is in the planning stage. An average score was computed allowing the placement of an "X" on the implementation curve, as depicted in Figure 6. The index consisted of the following variables and points:

a. Years in operation = actual years (the more experience with the OMP, the more it is potentially useful).

b. Annual work plan = 2 points (necessary for successful OMP implementation).

c. Annual meeting = 2 points (allows for multidisciplinary input).

d. Data in regular files = 1 point (necessary for basic information and organization).

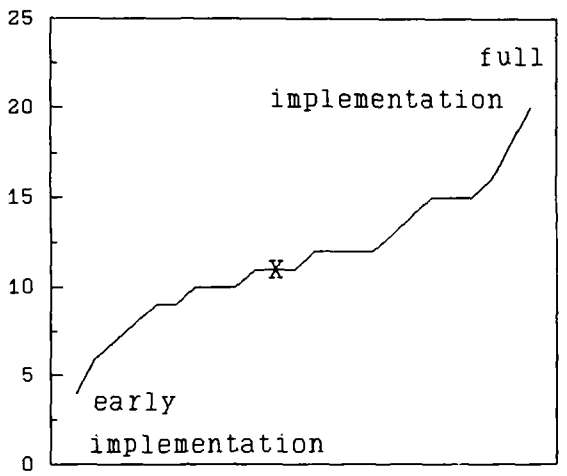


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Figure 6. Average score on the implementation curve

e. Data in word processing files = 2 points (OMP can be easily updated).

f. Data in spreadsheet or dBase files = 3 points (allows more organized and sophisticated analysis of information in written format).

g. Data in GIS files = 4 points (allows storage and sophisticated analysis of information in mapped format).

h. Times used per week = actual times (times per week may reflect OMPs implementation).

42. As an example taken from the data, project A has been using the OMP 2 years (2 points), has an annual work plan and meeting (4 points), has data stored in regular and word processing files (3 points), and uses the OMP 3 times per week (3 points) for a total of 12 points. Project B has been using the OMP 1 year (1 point), also has an annual work plan and meeting (4 points), has data stored in all file forms (10 points), and uses the OMP daily (5 points) for a total of 20 points. Projects range in scores from 4 to 20 points. The average for all projects is 11.4 (standard deviation = 3.9). The term "standard deviation" is used to characterize the "spread" of cases in

a sample about the mean. The more dispersion or spread of cases about the mean, the greater the standard deviation.

43. How useful has the OMP process been in improving daily project operations? When asked this question on a scale of 1 to 5 with 3 representing moderately useful, respondents rated the process as 3.5 (standard deviation = 0.77, n = 19). This response may be partially attributed to the previous figure indicating that the Corps is early in the process. For example, one respondent said,

> We've worked long and hard at getting a system or method done so we could prepare something that is more than just an exercise. After we get the "Goodtime Lake" OMP approved and in operation for a year or two, we'll be able to see how good our product is.

Another respondent echoed these comments with the statement,

> Give us 5 years under an approved OMP and then I could answer this. Although "Goodtime Lakes's" OMP is not yet approved, we started using the work plans as soon as we arrived at the appropriate year (FY 1988).

The OMP process is also an institutional process, as described by this respondent,

> We feel we have developed a process in the District that is acceptable through the whole chain of command. We're scheduling our OMPs with updating our master plans, and it appears to be working quite well.

In one plan that is referred to daily, the respondent says,

> The OMP is the backbone of the work plans, work priority, and missions.

Another said,

> The OMP seems to smooth out the work load by giving a long-range picture.

In a clear statement about its usefulness, this respondent remarked,

> The OMP has provided a home for a variety of administrative requirements, including annual planning and accountability. This seems to require that the OMP be revised annually.

This final comment seems to sum up the use of OMPs,

> OMPs are being set up in loose-leaf binder format so that individual sections can be inserted when completed or changed as necessary. We do not anticipate that the OMPs will ever be "complete," as they will be updated at least annually.

44. It appears that rangers, project managers, and District specialists can now apply their skills perhaps better than at any time in the history of resource management in the Corps, through the OMP. Essentially, it functions as a communication vehicle that outlines responsibility and provides direction.

45. Do the projects need any guidance in preparing an OMP? Respondents were asked about the type of guidance needed from three levels within the Corps and three methods of instruction. Figure 7 shows that institutional guidance seemed to follow the chain of command contacts with District guidance needed over Division and OCE (n = 22). Nearly 75 percent felt that a workshop would fulfill guidance needs. Perhaps a District coordinated workshop would satisfy the need for guidance.

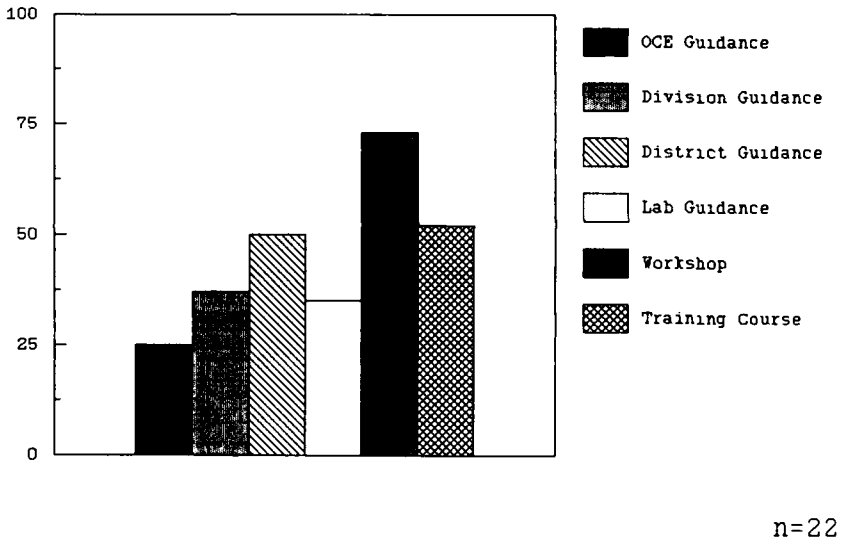

Figure 7. Percentage of respondents wanting guidance and training

46. One respondent who answered "yes" to a need for training said,

Because the OMP is project specific, guidance in the form of how to deal with problems in writing and planning OMPs would be helpful.

Another felt that

> Many other managers as well as District office staff have expressed the opinion that written guidance from higher authority would have been beneficial to their OMP preparations.

Finally, one said

> All of our OMPs are either complete or nearing completion. Guidance is late. However for future updates, additional guidance may be of some benefit. We basically like the present freedom allowed by using the regulations as a general outline.

47. One possibility for achieving this guidance is the development of a prototype OMP. Responses varied from the simple,

> Someone should provide sample documents which have been judged to be correct.

to the more detailed,

> Realizing that each project has specific concerns, a model or "prototype" OMP still may be a help. There is still some concern that draft OMPs will be submitted to Division and returned with comments requiring extensive rewriting or additional inventories.

48. For those Districts that have just begun the process of writing OMPs, this comment seems appropriate,

> Recommend that a prototype OMP be developed (per District or Division) to guide the development of remaining OMPs. This will avoid the problem of "lack of guidance."

49. One cautionary note on the prototype idea is the projection by respondents in this study that most OMPs will be written by 1990. Although it may be too late for a prototype to be completely effective, they may serve to re-orient existing OMPs and improve overall quality of the documents.

50. Not all comments on guidance were supportive. A lack of explicit guidance apparently assisted this preparer in producing a useful OMP.

> All research and thought were done at the project level in accordance with the ER. With only regulations as guidance, a very good product was achieved.

PART IV: MANAGEMENT IMPLICATIONS FOR IMPROVING THE OMP

51. In the preface to an OMP from the sample, a clear direction was written on the purpose and scope of the OMP:

> The OMP has been developed to direct the management of this project. The goal of the plan is to provide a management program reflective of a mixture of management activities that allow use and protection of project resources; fulfill legislative requirements; and address local, regional, and national issues and concerns. To accomplish this goal, the OMP:
>
> - Establishes management direction and associated long-range goals and objectives.
> - Specifies standards, guidelines, and the approximate timing and location of management practices.
> - Specifies management prescriptions and the locations in which prescriptions will be performed.
> - Develops annual and 5-year work plans.

Accepting the above statement as the proper guide for directing the OMP permits a discussion of what the data imply for future management directions. It would seem that as a start, all OMPs should include a clear statement of purpose.

52. Four areas emerged as requiring attention for improvement of the OMP process in the Corps. These are not intended as recommendations, but serve as considerations to be evaluated in conjunction with broader institutional concerns and developments.

Improving OMP Outlines

53. An OMP outline reveals much about how the team organizes the wealth of information contained in the plan. The findings of this report indicate a variety of outline formats. At one end of the spectrum, an example OMP lists topical issues like fire protection, encroachments, safety, physical security, maintenance, shoreline, and special programs; this outline resembles a shopping list and consequently lacks an understanding of the interrelationship of the issues. The more advanced outline presented previously in this report displays a very well-organized sequence of events that can actually enhance daily management activities.

54. The purpose of this subsection is to present a preliminary outline that can serve as a point of departure for projects and Districts to consider in organizing their OMP outlines.

I. Introduction
   Purpose

II. Project Narrative
   Eight Descriptive Features

III. Program Goals

IV. Management Plans
   Natural Resource Objectives
   Park Management Objectives

V. Monitoring Recreation and Resource Conditions

VI. Appendixes

55. The above outline, adapted from the Oahe Lake OMP, is organized to reflect a management system. The core elements of the OMP outline are the individual Management Plans. Preparing plans depends upon specifying a project narrative and program goals. By organizing component parts of the outline, outcomes can be observed, defined, and classified (Weiss 1972). The core sections of the OMP are described below.

I. Introduction

56. The introduction provides general information about the project and purpose of the OMP.

II. Project narrative

57. The project narrative is a broad-based description of the natural resources that provides a background for conducting a more efficient resource inventory. It also allows District personnel to understand the important or unique features of a project for explaining to other entities within and outside of the organization, especially when there are numerous projects or they differ greatly.

58. Landscape architect and planner Ian McHarg (1969) presented an eight-step process that follows the evolutionary workings of natural order. This should not substitute for an inventory; instead it provides a broad background for a better understanding of the resource, thereby permitting a more

efficient resource inventory. Criteria for the narrative descriptions include the following features:

a. Climate.

b. Historical geology.

c. Physiography.

d. Hydrology.

e. Pedology (soils).

f. Plant associations (timber).

g. Wildlife.

h. Existing land use.

Each step in the process assists in the understanding of the succeeding step.

III. Program goals

59. A program provides the project authority to allocate resources. Generally, this allocation is classified into (a) organizational-maintenance which includes staffing, budgets, and facilities, and (b) project development (Weiss 1972). Project development functions refer to responsibilities like boundary delineation that for many projects continues to make progress over the years. The program statement contains goals on what each program intends to accomplish. An example of this would be the project development goal to "secure park boundaries." The boundary delineation management plan would then specify annual objectives for marking boundaries (e.g. x miles marked with paint, posts, etc.).

IV. Management plans

60. With program responsibilities defined, the team can consider natural resources and park management that are further composed of important functions. These are referred to as management plans within the OMP. Oahe Lake chose to handle wildlife mitigation as a separate management plan. Resource inventories are included in these plans along with management objectives.

61. An important aspect of management plans involves the delineation of management units. Management units are often mapped zones delineated by natural, physical, or managerial criteria. They can be further subdivided into smaller units depending on the similarities or differences exhibited. For example, a finger channel of a lake may hold characteristics that make it different from other lake areas. There may be a half-dozen subunits or resource settings within the finger channel that delineate lakeshore cottages, woodduck nesting areas, and timber stand improvement plots. A campground may

be another unit based on management criteria and composed of day-use and boating access subunits. An understanding of these subunits and their interrelationships can assist managers in prioritizing actions. A manager exerts control over the resource setting (Clark, Gibbons, and Pauley 1985) allowing him/her to prescribe treatments to maintain or alter conditions.

V. Monitoring recreation and resource conditions

62. Monitoring provides a cost-effective method of measuring change and is discussed in detail in a later section.

VI. Appendixes

63. Appendixes provide a section for routine documents.

Writing Better Management Objectives

64. As noted previously in the report, the writing of objectives are in need of the most attention in the OMP process. In some cases they were termed project tasks, standards, and even guidelines. For OMPs an operational definition of objectives is: any short-term actions that are specific, output oriented, quantifiable, time bound, and attainable. An OMP with good objectives would adhere to this definition.

65. The advantages of writing better management objectives become evident as they are a part of daily operation. For example, they distill management concerns to a clear statement of what can really be accomplished (Shomaker 1984). Staff members can better understand what needs to be done, and this understanding in turn heightens their motivation to perform the task. Second, good objectives serve as standards of control. In the complex and uncertain job of management, certainty is afforded the manager who writes clear and unambiguous objectives for those tasks that are attainable. A final advantage of writing better management objectives is to better explain budgetary decisions.

Designing Resource Inventories

66. The information needs and requirements for resource inventories vary at different decision levels. For example, the Division office generally needs descriptive information about a project, whereas the project office needs more detailed information to conduct specific operations.

67. The information needs relate directly to the project's objectives. The important question is not, "How detailed are a project's inventories," but rather, "What inventory information does a project need to attain its management objectives?"

68. Inventory needs also vary from project to project. At one project where endangered species and erosion hazards are evident, objectives to gather sufficient detail would differ from wildlife sightings and soil survey maps. Onsite field investigations may be necessary to fulfill those information needs.

69. The necessary inventories and the level of detail for these inventories become more evident and can be efficiently collected when project objectives are clearly defined. Poorly defined or undefined objectives may result in too much or too little of the needed data or even the wrong data being collected. Furthermore, by prioritizing objectives, inventories can also be prioritized, especially when funds are limited.

70. Lund (1986), in an excellent primer on conducting resource inventories, developed some useful questions to ask when specifying inventory objectives:

a. What decisions are going to be made on the basis of the inventory?

b. What information is needed to make the decision?

c. What impact will errors in the information have on the decision being made?

d. What impact will incorrect decisions have on the resource?

e. What are the costs of collecting various sets of data?

f. How must the data be analyzed to provide the information in a usable form?

g. How are the responsibilities and costs shared?

h. How are the results to be presented?

i What is the area (survey or inventory unit) to which the decisions will apply?

j. What are the monitoring requirements?

He stated that the inventory objectives should be specific by indicating the primary attributes to be estimated, any limitations on the attributes, the precision required to make management decisions, and the survey area to which the estimates apply. An example of a proper objective inventory statement is

> to estimate the total gross cubic metre volume (live and dead) of trees with a diameter at breast height of 2 cm or more in the Dead Horse Planning Unit. This estimate should be within 20 percent of the true volume with 66-percent confidence.

An example of a confusing inventory request would be for

> data on potential bird nesting sites

rather than a request for

> the number of trees or snags per hectare with a diameter at breast height greater than 25 cm and a total height greater than 5 m (Lund 1986).

71. Since the OMP process allows for further progress in achieving multiple resource management, it follows that greater emphasis be placed on developing a multiple resource perspective. Multiple resource integration involves designing an inventory strategy to meet part or all information requirements for two or more resource functions, such as timber and wildlife management (Lund 1986). Areas inventoried with only one function considered often have to be inventoried again to obtain the necessary information. Projects must consider the entire resource information needs picture. Figure 8

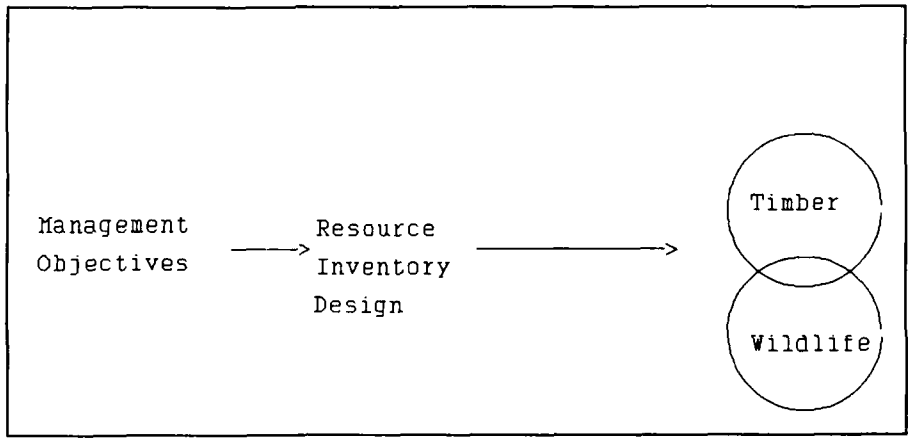

Figure 8. Resource inventory design model

shows the relationships between management objectives, inventory design, and two resource functions. However, there are exceptions to the multiple resource perspective. For example, with special purpose and single purpose inventories, such as timber sale cruises, a single inventory may still be necessary. If so, it should be coordinated with other inventories to avoid duplication. Lund (1986) stated,

> It is easy to get carried away by the enthusiasm over integration, but we hope common sense will prevail and tell us integration is not always necessary.

A common mistake in multiple resource inventories is the misconception that the requirements for management information for all resources are equal in priority, detail, complexity, and coverage. Again, they should be designed based on the project's needs, rather than left to chance. Expenses for conducting resource inventories are likely to be reduced when questions of integration are considered.

Monitoring Recreation and Resource Conditions

72. It is perhaps too early to be critical of OMPs for the lack of treatment on monitoring. Nonetheless, monitoring was called for by Secretary of the Army, John O. Marsh, Jr.,* in his statement on the importance of natural resources data collection and stewardship. Lund (1986) mentions that resource inventories provide only baseline data and that successive or serial inventories are needed to help explain the causes of change. This recognizes the temporal dimension of managing project resources.

73. Monitoring often relates to measurement indicators of change, such as soil compaction in campgrounds. Standards established and variables measured point to thresholds which, when reached, require management action. The identification of these indicators is dependent upon the measurement of resource variables over time, which for many projects has just begun. Geographical information systems provide excellent capabilities for storing, updating, and retrieving inventory data to monitor changes.

---

* John O. Marsh, Jr., 1986, Memorandum for the Assistant Secretary of the Army (Civil Works), Management of Natural Resources on Civil Works Land, Washington, DC.

74. As application of OMPs and other automated systems progress, monitoring is likely to share more pages in the plan. Many of the approaches previously discussed, such as writing better objectives and designing resource inventories, are prerequisites for efficient monitoring. Monitoring can also suggest new directions for resource inventories and visitor studies. Finally, it allows the OMP ". . . to serve as a living document . . ." to the extent that the inventory design is updated by incorporating trends in recreation and resource conditions.

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APPENDIX A: OPERATIONAL MANAGEMENT PLAN QUESTIONNAIRE

(Date)

Environmental Laboratory

(Address)

Dear (Name of Contact):

The Waterways Experiment Station is currently conducting a study for the Office, Chief of Engineers to better understand how Operational Management Plans (OMPs) are currently being implemented. We are also studying the benefits that a Geographic Information System (GIS) can offer in the preparation of OMPs and how a GIS can aid in the daily management of our projects.

As an integral part of this study, we would appreciate it if you would select a project that is representative of your OMPs, and answer the enclosed questionnaire for that project. If you do not have a project with a complete OMP, please select a project that has an OMP in progress and answer the questionnaire as best you can, skipping those questions that do not pertain to you. Comments on any ideas you may have concerning specific questions are welcome.

Please complete the questionnaire as soon as possible and return it and this letter in the enclosed envelope (handwritten responses to the questionnaire are fine). If you have any questions or need additional information, please feel free to contact Linda Peyman at (601) 634-2267 or me at (601) 634-2290.

Sincerely,

Michael R. Waring
Biologist

Enclosures

Operational Management Plan Questionnaire

The purpose of this study is to better understand how Operational Management Plans (OMP) are currently being used at Corps of Engineers projects. This questionnaire should be completed by District and/or Project personnel most responsible for preparing the OMP.

Section 1
Project Authorization

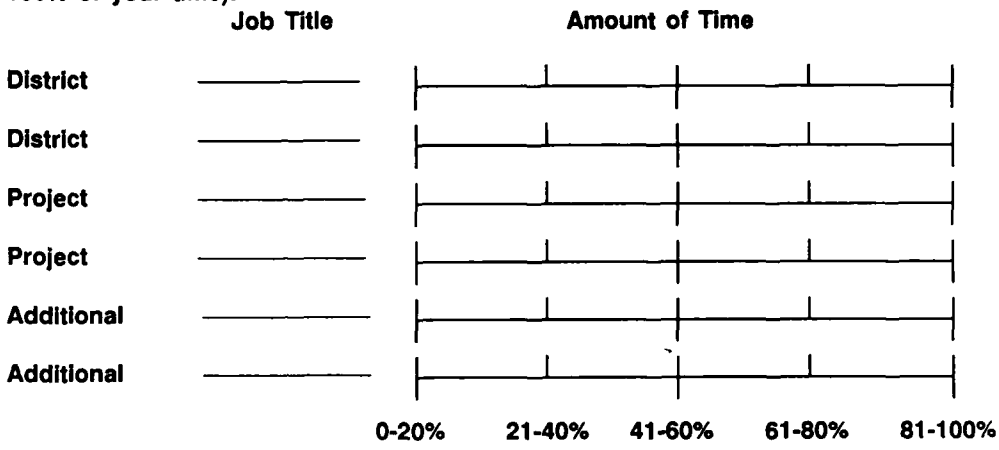
1. Congressionally authorized project purposes are listed below. Please mark (x) those authorizations which are applicable to your project. You may not have accurate information about the percent of benefits originally authorized or currently provided. If that is the case, please provide the best response you can based on your experience.

Name of project: _____

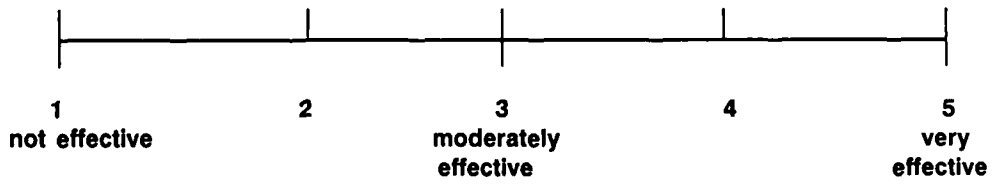
Purpose	Congressionally Authorized	Percent of Total Project Benefits Originally Authorized	Percent of Total Project Benefits Produced in an Average Year
Flood Control			
Navigation			
Water Supply			
Hydropower			
Irrigation			
Recreation			
Fish and Wildlife			
Other (Specify)			
	Total:	100%	100%

Section 2
Preparation of an OMP

2. Please indicate who prepared the OMP and the amount of time (exclusive of inventories) devoted toward its preparation. (Please circle one mark, from 0 to 100% of your time).



3. Please indicate the effectiveness of the above team toward preparing the OMP.



Briefly explain your reason.

4. How many years has your OMP been in use?

_____ years

5. Do you produce an annual work plan as part of the OMP?

( ) Yes ( ) No

If yes, does this include an annual meeting with all the team members or pertinent personnel?

( ) Yes ( ) No

6. Please indicate how the information found in the OMP is stored. Mark (x) each of those that apply.

	How Data Stored	Program Software (e.g., Wordstar, dBase III, etc.)
regular office files	( )	
wordprocessing files	( )	_____
spreadsheet files	( )	_____
data base program files	( )	_____
GIS	( )	_____
CAD	( )	_____
Other _____	( )	_____

7. What form is the OMP in? (Please mark (x) the appropriate category).

( ) Bound

( ) Looseleaf binder

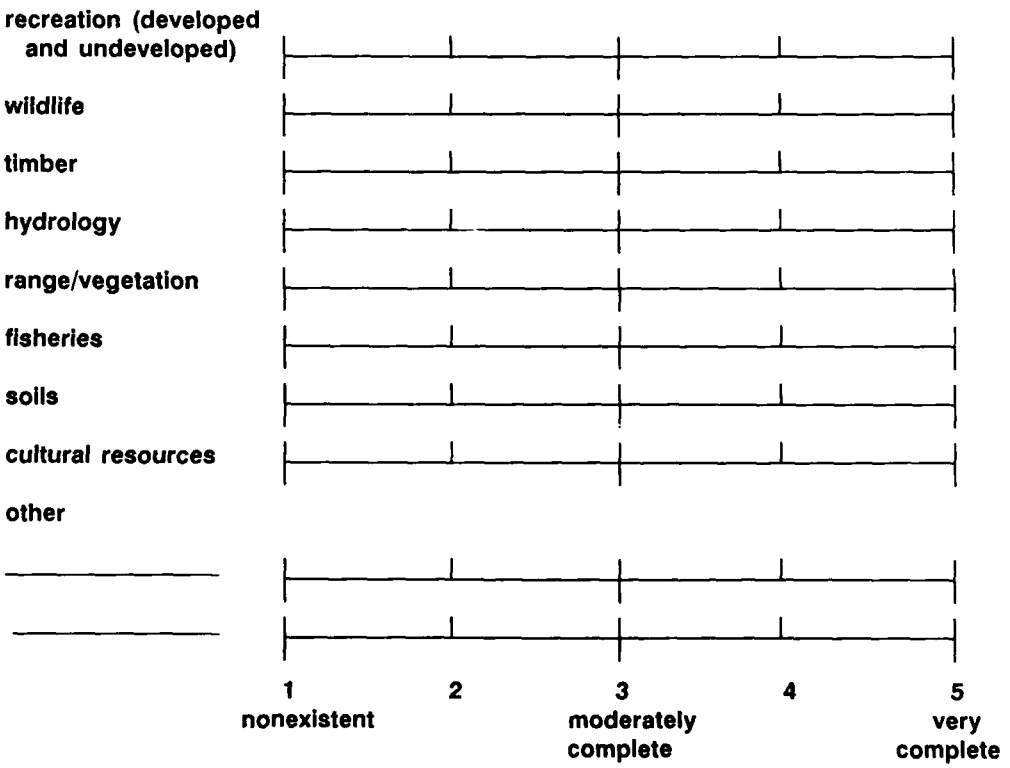
( ) Other _____

Section 3
Resource Inventories

8. Does your approach to the preparation of the OMP involve the use of resource inventories?

( ) Yes ( ) No If no, go to question 12.

9. Please indicate how complete the following inventories are. (Circle one mark for each category, from 1 to 5, representing a nonexistent to very complete inventory).



Comments (such as "Wildlife inventory is habitat based"): _____

_____

10. How would you characterize the major method(s) of analyzing and reporting the resource inventory? (Please mark (x) all applicable methods).

( ) narrative descriptions
( ) manual overlays
( ) data base management system
( ) geographical information system (GIS)

11. Do any of the following offices currently have GIS capabilities?

( ) Yes ( ) No Project Office (for which this OMP was prepared)

( ) Yes ( ) No District Office

( ) Yes ( ) No Division Office

If no, are there any plans to purchase a GIS for the above offices? Please explain. _____

_____

Section 4
Operations

12. Does your OMP include the following characteristics?

( ) Yes ( ) No Broad objectives that cover project area problems.

( ) Yes ( ) No Project is divided into management units.

( ) Yes ( ) No Objectives are prepared for management units.

( ) Yes ( ) No Priorities are assigned to management units.

13. **In a typical week, how often is the OMP used to aid in project operations?**

_____ **times per week**

14. **Please list some of the common reasons for referral to the OMP?**

District Referral _____

_____

_____

_____

Project Referral _____

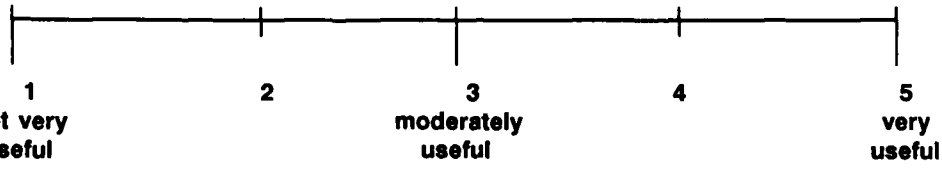
_____

_____

_____

_____

15. **How useful has the OMP process been in improving daily project operations?**



16. Would you like more guidance in developing an OMP through the following avenues?

		Written Guidance from:
( ) Yes	( ) No	OCE
( ) Yes	( ) No	Division
( ) Yes	( ) No	District
( ) Yes	( ) No	Lab
( ) Yes	( ) No	Workshop
( ) Yes	( ) No	Training Course

Other, please explain _____

_____

_____

17. To increase our understanding of your OMP, please send us a copy. If this is not possible, please enclose a photocopy of the Table of Contents when you return your questionnaire.

18. Feel free to provide any additional comments or thoughts that would improve the usefulness of OMPs in the Corps.

_____

_____

_____

_____

Thank you for your time!

For District Use Only

Please complete these additional questions. Your answers will help determine the overall status of the OMP within the Corps of Engineers.

1. How many projects does your District operate that require OMPs? _____ Feel free to comment.

2. What is the status of these OMPs? Please list the number of OMPs that corresponds to each category.

	Number of OMPs	Approximate Date for Completion
Complete	_____	_____
Under review	_____	_____
Under revision	_____	_____
Being written	_____	_____
Planned	_____	_____
Not anticipated	_____	_____

3. If the above numbers do not give a fair representation of OMPs at your District, please explain. For example, a District may have devoted its time to preparing guidelines or a prototype OMP to improve anticipated OMPs, rather than trying to complete all individual OMPs.